

The bill establishing a Bureau of Child Hygiene under the State Board of Health of California was signed by Governor Stephens May 27, 1919.

We hope at the next test that California will appear on the Birth Registration Area of the United States. 70 per cent. of the population of the country is included in this Area now. It is in the hands of every physician to assist better Birth Registration.

The Back-to-the-School drive, planned by the National Committee, we have covered in California by giving State-wide publicity to the new Legislation for Better Schools, which Mr. Wood, the Superintendent of Education, has before the Legislature. We have spread Posters and Fliers, furnished by the Government, throughout the State, and have covered the 3000 rural schools,—the one-room school of the State with from seven to thirty children—with a Rural School Health Program of the type of the four-minute talks, furnished to the teacher fourteen pieces of literature on Child Hygiene and a synopsis of these talks.

These were sent to every school in the State, with the co-operation of the County School Superintendents, and many of them are emphasizing the work in their County Institutes.

A booklet on "Clothers for California Children" will complete the literature of Children's Year, and will be issued throughout the State by the first of May. This will cover "Correct Clothing and Shoeing" for children from birth to twelve years of age. The child in the home and at school are both emphasized in this booklet. The play-ground costume of the bloomers and dress for girls, and the abuse of the sweater by boys as an in-door and out-of-door garment, are both emphasized.

Without the support which the California State Medical Society gave to the Children's Year Program, California could not have taken the prominent place which she did take in the development of this Program.

The Executive Committee of Children's Year is glad to have this opportunity to express its appreciation of the work of the medical profession in assisting the Program in California.

UNSATISFACTORY RESULTS FOLLOWING NON-INFECTED FINGER INJURIES IN INDUSTRIAL ACCIDENTS WITH SPECIAL REFERENCE TO AMPUTATIONS.*

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In the course of investigation of various matters associated with permanent injuries, I was greatly impressed by the fact that the rehabilitation of the injured workmen seemed often to depend less on the extent of the original injuries than on certain factors which in many cases appeared to be preventable. The purpose of this paper is to point out some of these causes of continued disability, illustrating same by notes which I jotted down on investigation reports at the time of the visits.

Present attention is limited to finger injuries because they comprise an unusually large proportion of industrial injuries and therefore of the cases seen in the investigation. Of 4,265 permanent injuries occurring in California in the years 1914, 1915 and 1916, 2,437, or over 50 per cent. were finger injuries. For the average laborer the fingers are the essential tools of his craft and anything which impairs their function seriously cripples his usefulness. The remarkable development in recent years of various manufacturing industries has multiplied many times the injuries of fingers among machine operators, and it is apparent that insufficient attention has been given this increasingly important subject by surgical writers. Of finger amputations, 1,946 occurred in the three years above mentioned, and only 189 amputations of arms, hands, legs or feet. The average medical college curriculum and surgical text devote undue attention to the latter subject, but little to the former.

Approximately 200 cases of non-infected finger injuries were seen. Practically all these were the results of accidents occurring in the years 1915 and 1916, in a district comprising roughly the northern part of the State of California. Unsatisfactory results were noted in 96 of these cases, 61 of which are presented in the accompanying tabulation. The cases omitted presented no additional features of interest. That 48 per cent. of unsatisfactory results should occur in finger injuries, even though not all are to be considered preventable, is a powerful argument for further consideration of this subject on the part of surgeons.

The cases with a history of infection are not included, for the reason that in them it is impossible now to recognize the problems which were met in the individual cases and to justly criticize the actual results. However, as bearing on these cases, instruction may be gained from the records of men with stiffened fingers who would rather have them off (*vide infra*).

Discredit may be thrown on this work on the ground that a certain proportion of injured workmen are apt to complain of non-existent defects on account of a natural propensity to "kick," or in order to exaggerate their condition for the sake of possible additional compensation. As far as the latter point is concerned, all were informed that the investigation was for statistical purposes only and that it was entirely without the jurisdiction of the investigator to re-open their cases. In fact, in most cases, as they well understood, the lapse of time prevented any possibility of their getting a higher rating. Moreover, in practically all instances the points complained of could be confirmed by objective findings. Care was taken not to suggest any particular symptoms, only such general questions being asked as: "How is the stump?", or "have you had any trouble at your work?"

The men of this series were mostly young and were practically all healthy, vigorous laborers. No inherent constitutional defects accounted for their failure to secure useful fingers after the injuries which they suffered.

*Read before County Medical Society, Dec. 10, 1918.

Group I.

CASES WITH INSUFFICIENT PAD ON STUMP AFTER AMPUTATION.

At the outset it may not be granted that the symptom so universally complained of in this group, sensitiveness to pressure, is due to an insufficiently thick covering of soft tissues over the end of the bone. My experience with such cases, however, has convinced me that it is the essential cause. Often by mere inspection or after palpation of the stump I could anticipate the next words of the injured man—"My finger is so sore on the end that I can't touch it against anything hard."

It would be interesting to see these men five years hence to find if their disability continues. It is the writer's belief that in most cases it will. It was generally claimed that there had been scarcely any improvement after recovery from the original traumatic condition.

The prophylactic remedy for insufficient pad is to shorten the bone until proper flaps can be secured to properly cover the stump. In view of the physiological fact that the tissues in an amputation stump waste away, the advisability of securing thick pads may be questioned. It is true that muscle tissue, and doubtless fat also, in whole or part, disappear from the flaps used to cover a stump, but examination of these stumps some time after the injury indicates that fibrous tissue has been substituted for the tissues that have wasted, and the extent of the development of the fibrous pad seems dependent on the original thickness of the covering (*ceteris paribus*). I have not had an opportunity to make an anatomical study of the stump of a previously amputated finger, but external examination has convinced me of the above fact.

The question of adherent scars is closely related to that of insufficient pad and some cases in Groups I and II are interchangeable. A cicatrix "improperly placed" is not often troublesome unless associated with insufficient pad. But there are many cases in my series where tenderness of the stump was caused by insufficient pad alone, not being associated with an adherent or improperly placed scar, and without evidence of the inclusion of nerve ends in the cicatrix.

GROUP I (16 cases omitted).

(f=finger, prox=proximal, mid=middle, dist=distal, jt=joint, phal=phalanx.)

(Time refers to period between accident and investigation. Occupation is that in which injured was engaged at time of investigation. "Major" and "Minor" refer to major and minor hands.)

- T. M., Riveter, 2 yrs., 9 mo.—Loss of thumb at dist. jt., minor. Very sensitive on end; gets sore so injured has to "lay off." Bone too close to skin.
- J. C., Carpenter, 2 yrs., 8 mo.—Loss of thumb at dist. jt., minor. Stump is painful, insufficient pad. Very hard to handle nails.
- M. C., Salesman, 2 yrs., 8 mo.—Loss of index thru mid. phal.; loss of tip of mid. f., minor. Stump of index is satisfactory, but middle finger is so sensitive on the

end because of insufficient pad over end of bone that it cannot be used for any work.

- T. H. M., Auto ship worker, 2 yrs., 4 mo.—Loss of index and mid. at prox. jt., minor. Stump of middle finger satisfactory, but index finger very sensitive so that he has to wear glove on that hand.
- J. E., Planing Mill man, 2 yrs., 3 mo.—Loss of mid. f. thru mid. phal., major. Pain and swelling if struck; wishes stump were off; insufficient pad.
- J. A. La B., Engineer, 2 yrs.—Loss of ring f. at dist. jt., major. Painful on end; bone *exposed*, not covered by skin.
- J. L., Laborer, 1 yr., 11 mo.—Loss of part of dist. phal. major thumb. Pain on touching tip of thumb to solid object, insufficient pad. Cannot return to former occupation, tailor, as thumb is too sore to use in making button holes.
- T. J. F., Carpenter, 1 yr., 7 mo.—Loss of mid. f. at dist. jt., minor. Tender on end; insufficient pad. Injured wishes it had been shortened back further.
- J. G., Garage Helper, 1 yr., 5 mo.—Loss of mid. f. through terminal phal., major. Very sensitive on end so he cannot touch anything solid against it. Can not work Ford auto throttle; nail deformed; insufficient pad.
- J. K., Mechanic, 1 yr., 1 mo.—Loss of index f. at dist. jt., minor. Wound healed satisfactorily, but has become sore again; insufficient pad.
- T. A. J., Sawyer, 1 yr., 1 mo.—Loss of ring f. thru mid. phal., minor. End very sensitive if struck and painful in cold weather. Terminal scar; insufficient pad.
- N. McC., Machinist, 8 mo.—Loss of index f. at dist. jt., major. End painful on pressure; limited movement; insufficient pad; adherent scar. Injured wishes finger had been severed at proximal joint.

Group II.

UNSATISFACTORY SCARS AFTER AMPUTATIONS.

It is an accepted principle that the scar following an amputation should be kept away from the point of pressure, which indicates a dorsal rather than terminal or volar cicatrix for fingers. In my series, however, there have been but few cases (see V. B., 6th case of Group II), where an improperly placed scar has of itself been the cause of disability, this despite the fact that a very large proportion of the scars are terminal or volar.

The nature of the original injury is usually such that the excess of damage is to the volar tissues leaving a natural dorsal flap which can be brought over and sutured. The amount of shortening which would be necessary to fashion a volar flap to cover the bone end renders this "text book" procedure objectionable. It is true that the skin of the palmar surface has better tactile sensation and stands up better under daily use than the dorsal skin, but these are insufficient reasons for marked shortening of the finger.

It is quite a different matter if a terminal or volar scar is adherent to the bone, associated as it usually is with insufficient pad. Accompanying the tenderness of the whole stump and especially at the scar itself, there will often be distinct limitation of movement on account of pain on sharp forcible flexion, as in grasping a tool. The "drawing" of the soft parts on the adherent scar during flexion can be plainly observed in such cases.

GROUP II (2 cases omitted).

- W. A. L., Machinist, 3 yrs., 1 mo.—Loss of thumb at dist. jt., minor. Severe pain on grasping any solid object firmly. Volar, adherent scar.
- W. H., Stat. Engineer, 2 yrs., 7 mo.—Loss of thumb at dist. jt., minor. Severe pain on grasping any solid object firmly. Volar, adherent scar.
- J. B., Well Driller, 2 yrs., 3 mo.—Loss of thumb at dist. jt., minor. Still tender to pressure. Terminal scar; adherent; insufficient pad.
- G. S., Machinist, 2 yrs., 3 mo.—Loss of little f. thru prox. phal., major. Always sore on end and pains severely for long while if struck. Insufficient pad.
- M. H., Carpenter, 1 yr., 8 mo.—Loss of thumb thru prox. phal., minor. Very sensitive on end so can not use thumb as opponent to index in handling nails. Terminal scar.
- V. B., Laborer, 1 yr., 3 mo.—Loss of mid. f. at distal jt., ring f. just prox. to dist. jt., both major. Very sensitive to pressure. Good pads but volar scars.
- E. G., Laborer, 1 yr., 1 mo.—Loss of little f. at prox. jt., minor. Still very tender at scar; has to wear glove at work. Adherent volar scar.

Group III.

ENDS OF SEVERED NERVES CAUGHT IN SCARS AFTER AMPUTATIONS.

The symptoms complained of, attributable to nerves being incorporated in amputation scar, were quite varied, but the most common was a more or less continuous paresthesia—numbness, tingling, "electric shock," etc. More disabling was definite tenderness at the end of the nerve, especially in a volar or terminal scar. On exerting point pressure along the line of the scar a slightly prominent place would be found, gentle pressure on which would cause a distinctly unpleasant sensation to the injured, often accompanied by immediate motor reaction. Such a finger is unsatisfactory.

Wherever it is possible, the nerves should receive the same attention in finger amputations as in a major amputation, at least where the amputation is proximal to the distal joint. The nearer the hand is approached the more essential does this become. Remembering the anatomical relation of the nerves to the arteries, it should not be too difficult to pick up the severed ends and remove the terminal portion.

GROUP III (5 cases omitted).

- J. B. P., Millwright, 2 yrs., 9 mo.—Loss of thumb thru prox. phal., index f. thru prox. phal., major. Good movement of stumps but end of index finger very sensitive and with continuous paresthesia. Nerve in scar.
- C. W., Laundry Worker, 1 yr., 9 mo.—Loss of index f. thru mid. phal., major (left). Stump sensitive and painful on flexion when there is drawing in of scar. Nerve in scar.
- C. J. M., Drayman, 1 yr., 2 mo.—Loss of thumb at dist. jt., minor. End very sensitive and continuous paresthesias. Nerve in scar.
- J. M., Carpenter, 1 yr., 2 mo.—Loss of index f. thru prox. phal., minor. Stump very sensitive. Nerve in scar. Neuroma. Trouble in handling nails.
- E. W. S., Tallier in lumber mill, 10 mo.—Loss of index f. at dist. jt., minor. Stump not painful, but paresthesia (numb-feeling) constantly. Nerve in scar.
- E. W. S., Tallyer in lumber mill, 10 mo.—Loss of all fingers thru metacarpal bones, major. Paresthesias very troublesome, keep him awake at night. Nerves in scar.
- H. L., Laborer, 9 mo.—Loss of index, mid., and ring f. at carpo-metacarpal joints. Scar is sensitive. Adherent nerves which will have to be removed.

GROUP IV (6 cases omitted).

DEFORMED NAILS FOLLOWING FINGER AMPUTATIONS

There is scarcely anything more troublesome to a worker than a defective finger nail. In some cases it sticks out from the stump like a hook and catches on things, sometimes tearing off, always very painful. The unfortunate part is that no matter how much trauma is done to the nail it continues to grow in. Sometimes only a fractional and very much disordered matrix survives the original injury and the nail is a mere stub, often narrow and sharp and growing out at right angles to the surface. Pressure on the point of this forces the base into the subjacent tissues and causes excruciating pain. The arrangement of the flaps may carry the matrix on to the terminal or even the volar surface, so the disability which ensues may be easily appreciated.

Unless most of the damage to the soft parts is on the dorsal surface, it is unusual for an amputation distal to the distal joint to be accompanied by a troublesome nail. In such cases the nail usually grows in straight and is highly valued by the injured workman, especially for the protection of a tender stump. In cases of amputation at the distal joint or proximal thereto, the surgeon must consider that the nail, should it appear, will be a nuisance and he ought to take steps to prevent its growth.

However, the essential point regarding a prospective deformed nail is the date relation to the soft parts and not the place at which the bone is amputated. It is surprising to note the reappearance of nails following amputations thru the middle

phalanx (three cases of this group) in which, evidently, a long dorsal flap was preserved. The chance that any little tag end may carry some matrix should be borne in mind—and the less there is of it the more troublesome the resulting nail is likely to be.

GROUP IV. (6 cases omitted).

- R. F. H., Tool-man, 2 yrs., 10 mo.—Loss of index f. at dist. jt., mid. f. thru mid. phal., major. Stump of nail on index finger troubles him all the time.
- G. A., Lumber yard laborer, 1 yr., 10 mo.—Loss of ring f. thru mid. phal., minor. Defective nail bothers and will have to be removed.
- P. J., Machinist, 1 yr., 8 mo.—Loss of index f. at dist. jt., major. Nail grew in and was removed, but still grows in and bothers.
- J. A. M., Flour Miller, 1 yr., 6 mo.—Loss of mid. f. thru mid. phal., minor. Defective nail stump gives great trouble.
- E. M. S., Gasboat Man, 1 yr., 5 mo.—Loss of substance from dorsum of index f., no bone lost. Sensitive nail stump will have to be removed.
- C. F., Cook, 1 yr., 4 mo.—Loss of index f. thru dist. phal., mid. f., thru mid. phal., major. Stumps are good, but defective nail on middle finger bothers him, growing out crooked, catching and tearing off; nail of index finger defective, but no inconvenience.

Group V.

TROPHIC DISTURBANCES—IMPAIRMENT OF CIRCULATION.

In criticizing the results of these cases, I feel that I am standing on rather insecure ground. It must be hard indeed to decide whether or not the nerve and vascular supply of the injured digit is going to be sufficient to maintain its vitality. I wish to point out one fact, however. It is of no value to a laborer to have a finger that is useless and painful, and unless the surgeon is convinced that the flaps have satisfactory anatomic relation to the finger, he should shorten the bone sufficiently to allow the formation of proper covering.

The circulation of every finger is more or less impaired after amputation. For years, most men complain of some pain in cold weather, etc. But the cases I have listed are of much more severe type than this, and it will be noted that most of the injuries have been severe crushing or laceration, following which the finger has had to be rebuilt. These "rebuilt" fingers *look* better than *no* finger and in some walks of life are highly desirable. For a workman they are usually only an annoyance.

GROUP V (3 cases omitted).

- L. W. V., Laborer, 2 yrs., 8 mo.—Loss of index f. at mid. jt., minor; result of laceration. Pains in cold weather; trophic disturbance.
- C. J., Farm laborer, 1 yr., 2 mo.—Loss of little f. thru mid. phal., immobility at mid. jt., minor; result of catching hand in cogs.

Finger bothers in cold weather; marked trophic disturbance (skin shiny, wasting); cyanotic.

- E. E., Tool Grinder, 1 yr., 2 mo.—Loss of index f. at dist. jt., minor. Very sensitive on end because of insufficient pad; marked trophic disturbance. He cannot use the finger at all in work and wishes it were off. Had to give up former occupation, carpentering, because he could not hold nails.
- S. H. T., Machinist, 1 yr., 1 mo.—Loss of ring f. at dist. jt., minor; result of crushing injury. Trophic disturbance; wasting, insufficient pad over end and along volar surface so finger is very tender and bothers at work; skin shiny; finger cyanotic.
- W. H. L., Marine Engineer, 1 yr.—Loss of index finger thru prox. phal. and immobility of mid. f. at mid. and dist. jts., major; result of severe wound. Middle finger has impairment of sensibility; continuous paresthesias; shiny skin; cyanosis; has to keep it wrapped up in cold weather; finger should be amputated.

Group VI.

IMMOBILITY OF FINGERS WITH CONSEQUENT LOSS OF USEFULNESS.

In most lines of work, it was found that a stiff finger was a liability rather than an asset, especially in cases of ankylosis of more than one joint. In case the surgeon can anticipate such a result it is certainly better to amputate at once.

GROUP VI (2 cases omitted).

- S. C., Woodchopper, 2 yrs., 8 mo.—Laceration resulting in immobility of index f., minor, at mid. and dist. jt. Painful volar scar; use of hand seriously interfered with; intends to have finger removed.
- C. E. D., Cook, 2 yrs., 7 mo.—Resection of mid. jt. of mid. f., minor, with consequent immobility, deformity and shortening. Finger is in the way at his work and injured wishes that it were off.
- R. E., Mill Hand, 2 yrs., 7 mo.—Loss of index f. thru mid. phal., little f. at prox. jt. Severe limited movement of middle and ring fingers at middle and distal joints; all major hand. The stiff, deformed fingers are only in the way and the injured wishes they were off.
- S. A. W., Ship Carpenter, 2 yrs.—Limited movement of index f., minor, at all joints. Seriously inconvenienced at work and thinks better if finger were off. Had to give up occupation as house carpenter, as he could not handle little nails.
- J. A. H., Machinist, 2 yrs., 3 mo.—Severe laceration of ring f. and little f., resulting in limitation of flexion; major. Fingers are in the way for certain work and injured wants them amputated.
- N. M., Section Foreman, 1 yr., 2 mo.—Immobility of index f. at dist. and mid. jts., major. Serious inconvenience. Injured re-

requested amputation at middle joint but was refused. Thinks much better if off.

Group VII.

MISCELLANEOUS DEFECTS.

The two cases of digits which give trouble solely because they are so large on the end, should be borne in mind in fashioning the flaps of an amputation. The bony processes which give trouble may be from misplaced pieces or may be real bony outgrowths. Care must be exercised to see that the bone is left smooth and that no loose fragments remain.

GROUP VII.

- E. W. J., Lard Refiner, 2 yrs., 8 mo.—Compound fracture of thumb, minor. Limited motion of distal joint. Proximal phalanx is so close to volar surface that thumb blisters whenever he uses it; very painful in cold weather.
- A. A., Stock Clerk, 2 yrs., 2 mo.—Immobility of thumb at dist. jt., minor, following fracture. Exostosis on volar surface forms painful knob under skin.
- W. G., Shipfitter, 2 yrs., 1 mo.—Loss of thumb thru dist. phal., minor. Dorsal scar. Not sensitive on end. Good stump except that it is large, bulbous on the end, making it inconvenient to pick up anything small, as a tack.
- J. McP., Laborer, 1 yr., 8 mo.—Loss of index f. at dist. jt., minor. Insufficient pad; tactile sensibility destroyed but stump is painful.
- J. R., Planer, 1 yr., 7 mo.—Loss of mid. f. thru mid. phal., major. Good stump except enlarged at end so that it gets skinned.
- E. E. T., Crane Operator, 1 yr., 6 mo.—Loss of mid. f. at prox. jt., minor. Sharp bony process palpable on volar surface at site of amputation, which is tender to pressure.
- M. F., Laborer, 1 yr., 2 mo.—Loss of tip of thumb, minor; painful on end, especially in cold weather so that he has to quit work.

Group VIII.

COMBINED DEFECTS.

Little need be added regarding these cases. They are, in the main, simply further examples of points previously brought out. I would call special attention to the fourth case, W. S., where it was thought an amputation would be necessary, but later it was decided not. The first thought was evidently the best one. The fifth case, W. E. McE., illustrates the general futility of stitching an amputated piece back on the stump and expecting a satisfactory working-man's finger to result.

GROUP VIII (5 cases omitted).

- W. H. S., Laborer, 2 yrs., 10 mo.—Loss of mid. f. thru mid. phal., loss of substance from dorsum of ring f., minor. Nerve end in scar of middle finger is very sensitive. Deformed nail of ring finger.
- A. P. M., Machinist, 2 yrs., 4 mo.—Loss of index and mid. f., thru dist. phalanges, major.

Bothered by tenderness at all work. Volar scar on middle finger with sensitive nerve end. Defective nails bother him.

- N. T., Carpenter, 2 yrs., 4 mo.—Loss of index f. at mid. jt., minor. Insufficient pad; continuous paresthesias from nerve ends in scar. Greatly inconvenienced at his work holding nails.
- W. S., Carpenter, 2 yrs., 4 mo.—Loss of substance of thumb, minor; result of a crushing injury and perforation of end of the thumb by nail. It was first thought that amputation would be necessary. Defective nail causes bleeding when he touches anything with it. Thumb pains when he touches any hard surface and pains unbearably in winter.
- W. E. McE., Laborer, 1 yr., 11 mo.—Wound of dist. phal. of index f., major. Finger gets so cold in winter injured has to sit on it. Wishes finger were amputated. Tip of finger was practically amputated, but was replaced and grew. Damaged nail bothers very much; tingling feeling continuously.
- J. U., Cooper, 1 yr., 11 mo.—Loss of substance mid. f., major. No bone lost. Stump is very sensitive on end; insufficient pad; deformed nail; injured thinks finger should have been amputated further proximally.
- A. B., Comptometer Operator and Typist, 1 yr., 10 mo.—Loss of index finger thru dist. phal., minor. Tip gets blue and pains severely clear up to forearm in cold weather. Very tender on end account of insufficient pad. Injured cannot use finger at work.
- F. C. H., Blacksmith, 1 yr., 10 mo.—Loss of thumb at dist. jt., major. Limited movement; volar scar; insufficient pad; a new operation needed to shorten bone.
- H. W., Hardware Clerk, 1 yr.—Loss of mid. f. thru mid. phal., index f. at dist. jt., minor. Imperfect nail on index finger. Very troublesome. Adherent scar and insufficient pad at end of middle finger causing pain on flexion so that grip is impaired. Dynamometer—right, 62 kilos; left, 39 kilos.
- T. E., Cannery Laborer, 10 mo.—Loss of index and mid. f. at dist. jt., little f. at mid. jt., all major. All ends sensitive; bone exposed on index finger; sensitive nerves in scars of little and ring fingers.
- A. H., Blacksmith, 10 mo.—Loss of little f. at dist. jt., major. Terminal scar which won't "callous over"; sensitive if struck; piece of nail bothers him.

It would appear to be an ideal plan to refrain from shortening back the finger or doing other operative work until it can be determined just how much is going to be absolutely necessary. The difficulty with this is, that the original convalescence is thereby usually much prolonged, a serious

matter to a laboring man with dependents, and unnecessary suffering, often severe, is caused.

More important, however, as is shown by many of the above cases, is the fact that if a surgeon lets the finger heal to see just what may be needed in the way of further work, the chances are that he will never have an opportunity to do anything more. The average laborer is very reluctant to place himself again under the attention of a surgeon. Although he suffers severely from a defect and would like to have it corrected, there is a certain inertia preventing his having the work done and he often feels that "maybe the doctor will just make it worse." Furthermore, the time of his second operation will constitute a further drain on his finances.

It appears that later operative work is not exceptionally successful, particularly in reference to nails. Some cases have had several operations to remove the matrix, the final result being unsuccessful.

In treating the injured finger of a workman, the essential point to be borne in mind is that he should be given the most useful hand possible. For some classes of people the possession of an apparently intact hand is a great asset, but the presence on a laborer's hand of a stiff finger that is only in his way or a good long stump that is so sore on the end that he cannot use it, indicates that the surgeon has not done his full duty.

Special attention should be given to the occupation of the injured man. We should adapt the final result to the work in which he intends to engage as soon as he has recovered. Many cases in which remediable defects seriously hindered work at some skilled trade were noted. E. g., the extreme importance of a properly functioning thumb and index finger on the minor hand of a carpenter is indicated by cases. J. C., Group I, 2nd case; N. H., Group II, 5th case; J. M., Group III, 4th case; R. R., Group V, 3rd case; S. A. W., Group VI, 5th case; N. T., Group VIII, 3rd case.

Though somewhat in the nature of a digression, I wish to speak of a fact which is incorrectly stated in many texts. Following amputation of a finger at the middle joint, or through the proximal phalanx, it seems to be expected that great limitation of movement of the stump will occur because of the attachment of the long flexors and extensor only to the middle and distal phalanges. In scarcely a single case of such amputations have I found a serious limitation of movement, and in most cases the full range seemed to be present with good strength. The power usually present would seem to be greater than could be accounted for by the function of the small muscles of the hand and I believe that the function of the larger muscles is, as a rule, preserved. In many cases of traumatic amputation it seems unlikely that the surgeon has been able to secure the ends of the retracted tendons and secure to the terminal end of the stump, and in some cases I know that this has not been done. Yet good function has been secured. It is, therefore, my opinion that the long muscles retain working attachment to the proximal phalanx either through normal anatomical structures, the dense

fibrous tissue on the dorsum with which the extensor tendon is closely incorporated, the vincula tendinum on the volar surface, or by firm cicatricial tissue developed as result of the trauma. Doubtless a combination of these two factors is the true picture.

It may be worth while also to emphasize the fact that while the fibrous expansions and attachments of the tendons of the common extensors are such as to make extensive retraction exceedingly unlikely, the common flexors are entirely free to retract as far as the attachments of their synovial sheaths and lumbricals will permit in case of amputations through the proximal phalanx. The extensor tendons are so firmly united to the capsules of the metatarsal phalangeal joints and to the phalanges themselves that any but a very slight retraction would seem to be impossible, hence even if the cut ends would not gain secondary attachments they undoubtedly would have a powerful extensor effect. Since the tendons of the flexors are not so related any adhesions could make them active upon such amputated stumps. An investigation is now being carried forward to determine if possible whether the movements of flexion in such stumps are anywhere near as powerful as extension. If not, such flexor movements as they have made possible will be due solely to the lumbricals reinforced slightly by the interossei in all and specially in case of the second, fourth and fifth fingers. Since the middle finger has no palmar interossei its stump could, of course, not be flexed at all if that flexion depended upon the palmar interossei. The same thing holds true for the fifth finger in the movements of extension, if this movement also depended solely upon the interossei as we have intimated. It is not exactly certain to just what extent activity of the interossei shows itself in abduction or adduction of the stumps in extension and flexion. This point will also be the subject for another investigation.

It is possible that the proximal portion of the middle phalanx has been preserved many times when it had much better come off, but the surgeon did not want to leave an immobile stump. Also the choice of amputation site may have been at the proximal end of the proximal phalanx rather than through its middle or at the distal end, in order to avoid a stump, which, immobile, would be a nuisance. Either of these procedures is unnecessary and impairs the usefulness of injured's hand. These stumps are never immobile unless some additional factors come into play.

CONCLUSIONS:

(1) The frequency of finger injuries renders this possibly the most important subject in industrial accident surgery.

(2) To avoid an over-sensitive stump a good pad of soft tissue should overlie the bone end.

(3) The position of the scar is less important than the question whether it is adherent to the bone (associated with insufficient pad), or has a nerve end caught in it.

(4) Wherever possible, severed nerves should be shortened to avoid inclusion of the end in the cicatrix.

(5) The possibility of a troublesome deformed nail should be considered where the damage to the soft parts extends as far proximally as the distal joint, and a defective nail may still appear in case of amputation thru the middle phalanx, depending on the size of the dorsal flap. Such nails are a nuisance and should be avoided by removal of the entire matrix.

(6) A finger "rebuilt" after severe damage is more than likely to be a nuisance to a laborer. Assurance must be had of blood and nerve supply sufficient to maintain normal vitality. Otherwise amputation is preferable.

(7) Dependent somewhat on the nature of the occupation, a stiff finger is usually of no utility and impairs the function of the hand. If the adjacent finger is also injured severely, it is more often advisable to save a severely damaged finger.

(8) Amputation flaps should be neatly constructed and the bone end carefully inspected for irregularities or loose fragments.

(9) It is usually better to do all operative work at once rather than wait for later developments.

(10) The surgeon should remember that a laborer's hand is going to be used to work with, and he should, when possible, adapt the result to the occupation of the injured.

(11) Stumps of fingers amputated at the middle joint or through the proximal phalanx are mobile, and good function is the rule.

It is a serious matter to accuse surgeons of disregard for the welfare of the injured person for the benefit of the insurance carrier, and such a charge is by no means on the whole justified. Many of the defects above enumerated could have been avoided without increasing the compensation paid. However, there is a definite tendency on the part of some practitioners to avoid removal of the terminal portion of a phalanx if it is in any way possible to cover it with soft parts, it being apparently a matter of secondary importance how little vitality is preserved in the scraps of tissue or how thin the terminal pad. This is, in fact, the honest teaching of many surgeons, but in some instances the perpetrators of such work have spoken to me of such cases with pride—because they had thereby *just* been able to prevent the patient from getting the next higher rating.

I make no reservation when I state that the matter of prospective compensation should be dismissed utterly from one's mind in handling a case of industrial injury. Any other attitude must inevitably work to the disadvantage of the injured workman, the one whose interest the attending surgeon is, by the standards of his profession, bound to consider all-important.

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THE PROBLEM OF THE WOMAN VENEREAL DISEASE CARRIER.*

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When the Federal authorities chose to recognize the danger to the troops presented by the presence of women venereal disease carriers in the vicinities of the army camps, a great step in the fight against these diseases had been taken. In discussing the problem of the woman infected by syphilis or gonorrhoea, the fact that both men and women are carriers, should not be ignored; however, the women are the more conspicuous individuals, often passing their lives in response to the demand for illicit sex relations, and they can usually be apprehended readily enough. They form a social group, for which society has but little consideration, whereas their patrons, on whose bounty they subsist, frequently are able by the strength of their social and economic positions to avoid entirely most of the unpleasant consequences of vicious acts. Punishment or care for the women alone, has never and will never solve the problem, of eradicating venereal disease. Moreover, from the standpoint of public health, one of the most significant aspects is the association of prostitution with venereal diseases and the dissemination of the infection outside of the circle of the original offender. The prostitute simply satisfies a demand, and so far as information can be obtained the supply, even now, does not exceed the demand. This means but one thing, that if prostitution and its associated diseases are ever to disappear, education alone will bring this about. The single standard of morals in sex matters, only a few years ago, was laughed at as impossible and even undesirable. The whole world knows differently now. As with most great and lasting things, full understanding is necessary for a change in attitude. An old argument on the part of the prostitute in her own behalf and one which is even now advanced occasionally, has been that the prostitute saves the other woman by a voluntary entrance into a life of vice, simply assuming that illicit sex relations must be taken as a matter of course. Experience with the great body of men enlisted by the Government, has rendered this defense a vain one.

Inasmuch as sex immorality was known to be the greatest factor in the exposure to venereal disease it was at once judged essential to keep the soldier away from the prostitute. As a result of the desire on the part of the Government to free localities from camp followers, who would be a menace to the health and efficiency of the men, special efforts were made during the war to apprehend and examine all suspicious women in the vicinity of the camps. With this work the state and local officials cooperated. Records of women so arrested and examined are now available for the year 1918. Throughout the State of California, 3066 women were held for examination and of these, 1969 or 64% were

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